

SUBJECT: Updated Anamorphic Assembly Print

STAT

Gentlemen:

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Enclosed are two (2) copies of the subject print updated in accordance with a discussion held with cognizant personnel from your office on 15 February 1965.

The change incorporated corrects the previous erroneously recorded lens numbers. In effect, our drawing now properly depicts the 35 mm lens which was shipped with the equipment.

In confirmation of our previous discussion, we wish to advise that we have not yet received data confirming your final acceptance of the equipment on 14 December 1964. Your cooperation in this matter will be appreciated.

Very truly yours,

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Contract Administrator

CML/sr  
Encl.

Declass Review by  
NIMA/DOD

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Next 2 Page(s) In Document Exempt

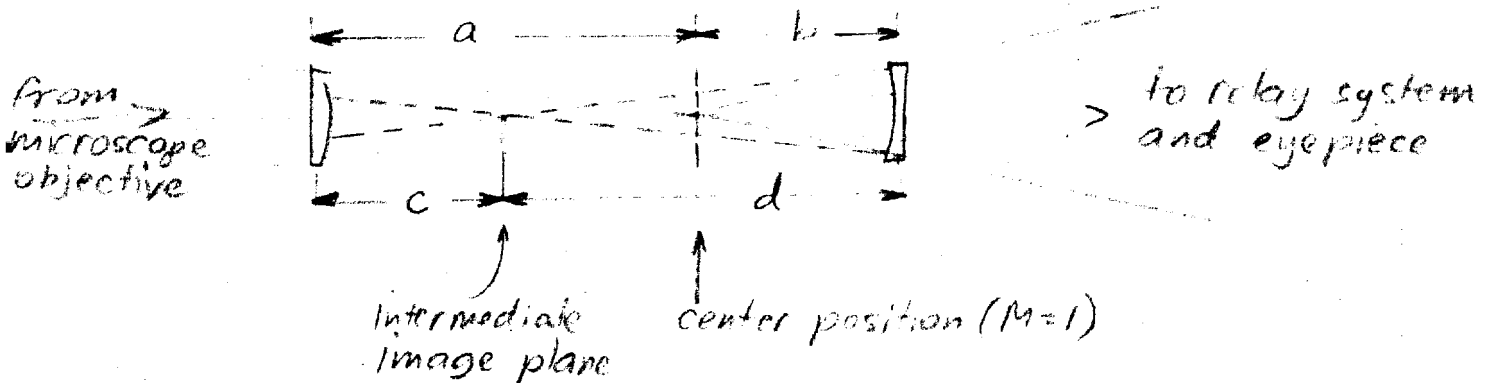
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# ANAMORPHIC ZOOM EYEPIECE.

Formulae for calculating design parameters.

System ①

$$M \leq 1$$



$$M = \frac{f-b}{f+a} = \frac{b^2}{a^2}$$

$$f = \frac{b}{1-\sqrt{M}}$$

$$f = \frac{a\sqrt{M}}{1-\sqrt{M}}$$

Relay system must have a magnification of  $\frac{1}{M_{min}}$  in order to avoid vignetting

Remark Center position must be at the location of the original final image plane (at the eyepiece) of the regular unmodified Stereo Zoom To Microscope, or the image will go out of focus during main zoom.

Design Parameters

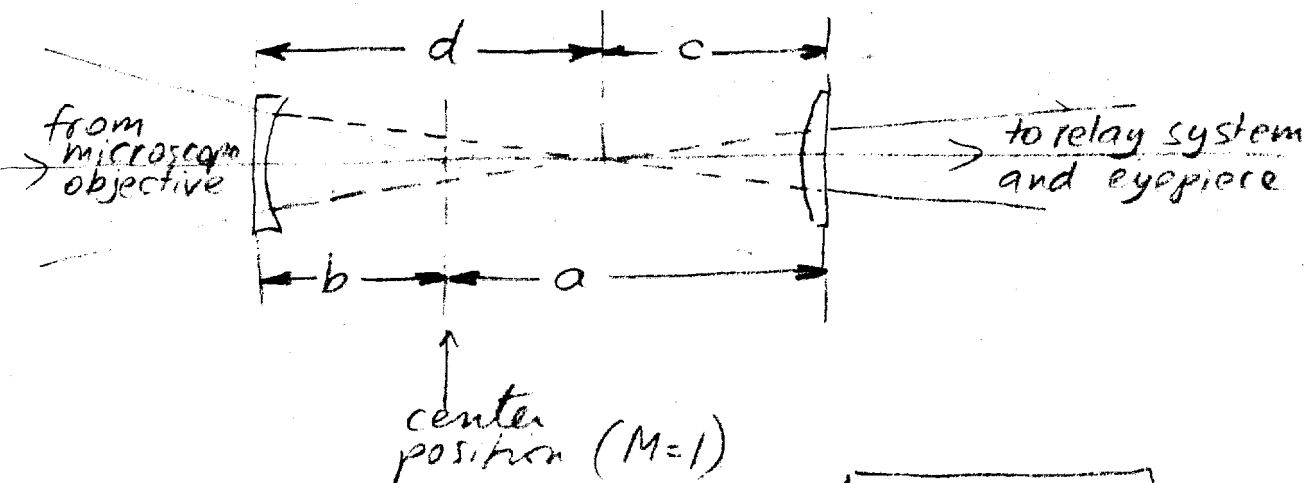
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ANAMORPHIC

ZOOM EYEPIECE

System (2)

$$M \geq 1$$



Relation  $a = a(b)$

$$a = \frac{bf}{f-b}$$

$$b = \frac{af}{f+a}$$

$$M = \frac{f+a}{f-b} = \frac{a^2}{b^2}$$

Remark: These expressions are correct for thin lenses

$$f = \frac{a}{\sqrt{M}-1}$$

$$f = \frac{b\sqrt{M}}{\sqrt{M}-1}$$

Relay system magnification: Unity

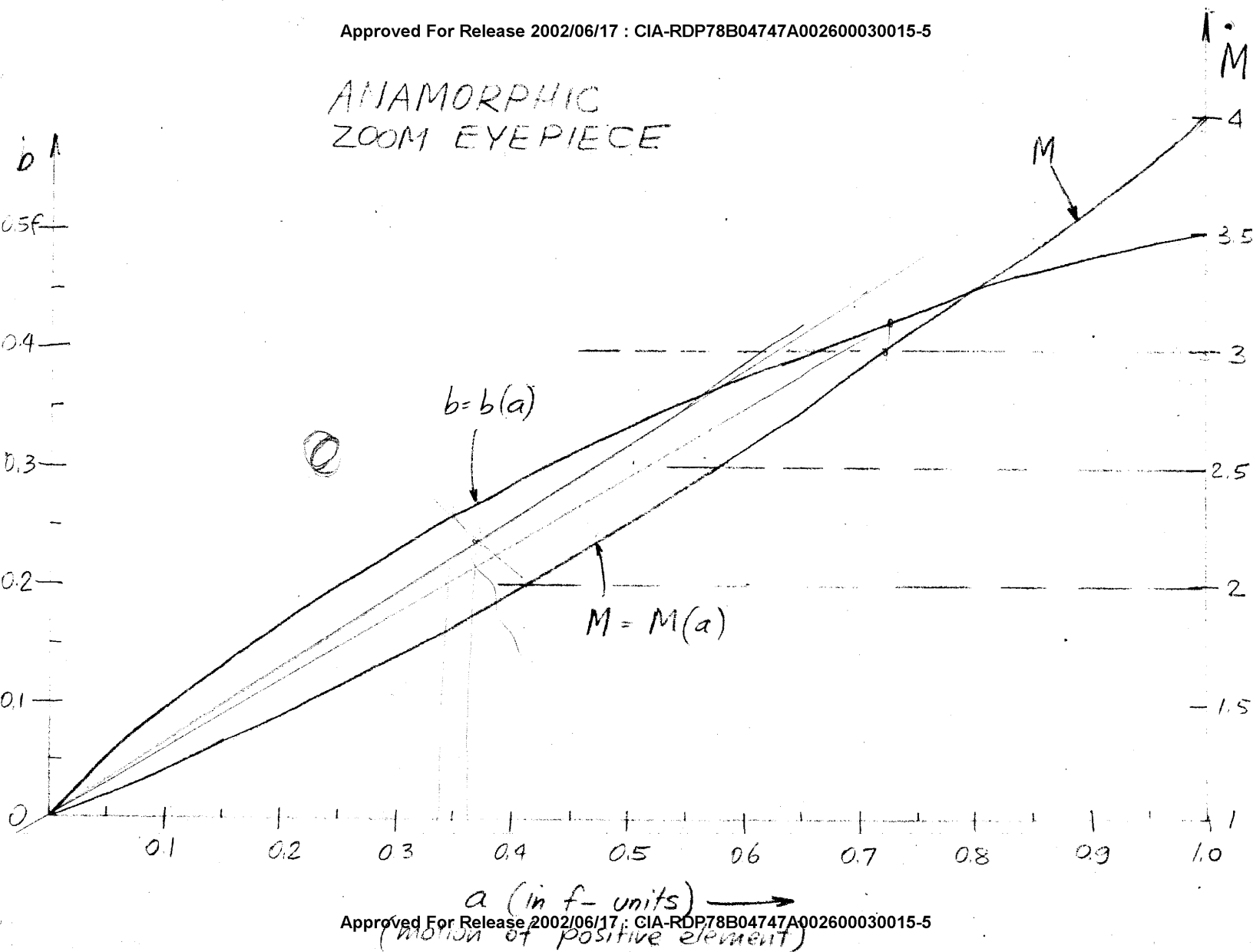
Remark: This System is preferred by customer

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# ANAMORPHIC ZOOM EYEPiece



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Available*

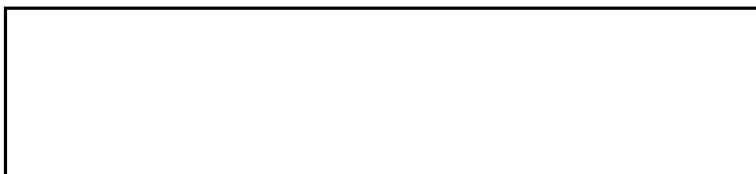
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ANAMORPHIC ZOOM EYEPIECE

Tests Performed On 2 November 1964

PRESENT

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## 1. Resolution:

- a) Instrument with regular eyepiece (10x and 20x)
- b) Instrument with anamorphic zoom and regular eyepieces (10x and 20x)

Results: On Air Force Resolution targets, the following groups were being resolved:

- a) 10x - - - - - 7-2 (144 lines/mm)  
20x - - - - - 7-3 (161 lines/mm)
- b) 10x - - - - - 7-2  
20x - - - - - 7-3

Remark: The lines of the last resolvable group appeared to be somewhat sharper on test 1a, compared to 1b, the difference however, was less than one whole group.

## 2. Anamorphic Zoom Range:

- a) At zero position (equal magnification in x and y direction) rotation of the axis did not result in any change of the image. This demonstrates that no anamorphism is present at the zero position.
- b) Maximum zoom ratio:

From the zero position up to a magnification ratio which was judged to be approximately 3 to one, no change in relative focus was observed. The ratio could further be increased to approximately 5 to one, in which case refocusing was required by using the fine focus ring on the instrument.



- 2 -

3. Rotation of the Axis:

It was observed that the design of the instrument permits about 180° rotation of the axes. However, this control was judged to be somewhat tight and shall be made to work more smoothly.

4. Image Quality:

The following optical aberrations were judged to be absent or within tolerable limits: Astigmatism and color of the image.

5. Mechanical parts providing interpupillary adjustment and locking of the two eyepieces were not finished at the time of the above test and therefore no acceptance tests could be made in this respect.

STAT The tests performed and described above have been witnessed and constitute [redacted] The same tests are agreed to be used by the customer for final acceptance testing at destination

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KJ/cff  
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